Peter H Rau

PART III.

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EXPLORATIONS AND SURVEYS FOR A RAILROAD ROUTE FROM THE MISSISSIPPI RIVER TO THE PACIFIC OCEAN.

WAR DEPARTMENT.

ROUTES IN CALIFORNIA, TO CONNECT WITH THE ROUTES NEAR THE THIRTY-FIFTH AND THIRTY-SECOND PARALLELS, EXPLORED BY LIEUT. R. S. WILLIAMSON, CORPS TOPOGRAPHICAL ENGINEERS, IN 1853.

BOTANICAL REPORT:

BY

E. DURAND AND T. C. HILGARD, M. D.

WASHINGTON, D. C.
1855.

DESCRIPTION OF PLANTS COLLECTED UPON THE EXPEDITION.

RANUNCULACEÆ.

CLEMATIS LIGUSTICIFOLIA, *Nutt. in Torr. & Gr. Flora, vol.* 1, *p.* 9 ; *Gray's Pl. Fendl., p.* 3. Posé creek ; August and September.

PAPAVERACEÆ.

ARGEMONE MUNITA, *nova species*. Planta glaucissima, erecta, tenera, aculeis albis retrorsis horrens, circa $2\frac{1}{2}$ pedalis. Folia subamplexicaulia elongato-cordata valde repando-sinuata undulata lobis rotundatis. Flores in apicibus 3–4 conferti, breviter divaricateque pedunculati. Calyx 3-sepalus caducus setosus, quoque sepalo cornuto, cornu in aculeum validum desinente. Corolla 6-petala maxima, 3–4″ diametro ; petalis cuneato-obovatis margine denticulatis albis recte venosis. Germen lanceolato-cylindricum, aculeis rectis dense obtectum. Capsula adhuc ignota.

Stem branching, about $2\frac{1}{2}$ feet high. The whole plant very glaucous and, chiefly on the stems and margins of the leaves, densely covered with strong and slightly retrorse prickles. Leaves subclasping, elongate-cordate, with oblong rounded lobes deeply repando-sinuate and undulate. Flowers in clusters of 3–4 on short divaricate peduncles. Calyx 3-sepalous, prickly, each sepal bearing a horn terminating in a strong prickle. Corolla 3–4″ in diameter; petals six, white, veined, with slightly denticulate margins. Germ lanceolate-cylindrical, densely covered with erect prickles. Capsule unknown.

The specimens submitted to our examination are incomplete, and not sufficiently advanced to determine the shape of the mature capsule and seed. We have compared it with various forms of *A. Mexicana* and with the figure of Lindley's *A. grandiflora* in Bot. Reg. T. 1264. In ours the texture is more delicate than in *A. Mexicana*, and the habitus of the leaves and branches is less acute than in either, being more rounded and undulating ; the peduncles are shorter, stouter, and more divaricate. It grows in large patches at Williamson's Pass, and was in full bloom in August and September.

CRUCIFERÆ.

PACHYPODIUM INTEGRIFOLIUM, *Nutt. in Torr. & Gr.'s Flora, vol.* 1, *p.* 96. Edge of Mohave desert ; September.

STANLEYA INTEGRIFOLIA, *Torr. in Capt. Sitgreaves' Report, T.* 1. Posé creek ; August. Dr. Torrey's *S. integrifolia* differs from James's plant by pedicels much shorter than the stipes ; in the latter, the pedicels are half as long as the stipes.

ZYGOPHYLLACEÆ.

LARREA MEXICANA, *Moric. in Gray's Gen. Ill., vol.* 2, *T.* 147; L. glutinosa, *Engelm. App. Wisliz., p.* 93. *Zygophyllum tridentatum, D. C.*, 1 *Fl. Mex.* A very common resinous shrub, known in the far west by the name of kreosote plant, on account of its very strong smell. The resin of this shrub, collected by the Pimos Indians, is formed by them into balls which they kick and send before them with their feet, as they journey from one point to the other of their trail.

MALVACEÆ.

SIDALCEA MALVÆFLORA, *Gray's Pl. Wright. part* 1, *p.* 16; S. Neo-Mexicana, *Gray's Pl. Fendl., p.* 23. Sida malvæflora, *Moc. and Sesse.* Posé creek; September.

MALVASTRUM MARRUBIOIDES, *nova species.* Circa bipedalis erecta, tomento stellato albida. Folia petiolata, late-ovata basi truncata vix, triloba, crenato-dentata, subtus reticulato-venosa. Stipulæ lineares. Calycis laciniis ovato-lanceolatis acuminatis. Flores glabri rosei, in paniculis brevibus axillaribus 3–5-floris glomerati ac in spicam terminalem desinentes.

Plant erect, about two feet high, covered with a dense stellate tomentum, of two different sizes, that gives it a pale color and a sandy feel. Leaves petiolate, broadly ovate, truncate at the base, subtrilobate, crenate-dentate, reticulately veined underneath. Stipules linear. Segments of the calyx ovate-lanceolate acuminate. Flowers smooth, rose colored, glomerate in short panicles of 3–5 in the axils of the leaves and merging into a terminal spike. Fort Miller; July.

LEGUMINOSÆ.

HOSACKIA LATHYROIDES, *nova species.* Herba cæspitosa, basi ramosa, caulibus subflexuosis, minute pubescens. Folia imparipinnata, foliolis 5–7 lineari-lanceolatis utrinque acutis. Stipulæ minutæ scariosæ ovatæ acuminatæ. Umbellæ 1–3-floræ, bracteâ lineari-lanceolatâ in parcioribus. Flores subsessiles 5‴ longi, flavi, calycis dentibus lineari-acutis.

Herbaceous and cespitose, branching near the base, rather flexuose, minutely pubescent. Leaves imparipinnate; leaflets 5–7 linear-lanceolate, acute at both ends. Stipules rudimentary, membranaceous, ovate acuminate; umbels 1–3-flowered; bract (only on the poorer umbels) linear-lanceolate. Flowers 5‴ long, light yellow; teeth of the calyx linear-lanceolate. Resembles somewhat the figure of *Lotus pinnatus*, Hook. in Bot. Mag. T. 2913, than which, however, it has longer and narrower leaves. Fort Miller, on the banks of San Joaquin river; August.

HOSACKIA HEERMANNI, *H. decumbens, var. glabriuscula? Hook. & Arn. in Torr. & Gray's Fl. vol.* 1, *p.* 324. Suffrutex sat regulariter ramulosus, omnino puberulus, 1½–2 pedalis. Ramuli tenues subflexuosi foliosi umbellosi, internodiis foliorum fere longitudine. Folia fere omnia umbellam in axillo gerentia—imparipinnata, foliolis 3–5 alternantibus, rhomboideo-ovatis acutis mucronulatis pubescentibus; stipulis minutis fusiformibus rubicundis lanugine alba celatis. Umbellarum pedunculi rachidis folii fere longitudine, 2–4–6-flori foliolumque solitarium ferentes. Flores subsessiles. Calyx campanulato-tubulosus pubescens, laciniis acutissimis. Corolla parva flava, petalis gracilibus obtusis, apice fusco-purpurascentibus. Legumen pubescens, pendulum, incurvum, rostro subrefracto subulato apice uncinato vixque dimidiâ leguminis longitudine. Semina 1–2. Ab. *H. decumbente* distinguitur formâ ramosiore ac pubescentiâ densiore, foliis mucronulatis, stipulis haud spinosis, umbellarum pedunculis multo brevioribus, flore minori apice purpurascenti leguminibusque ecarinatis.

Suffruticose, pretty regularly branching, softly pubescent throughout, 1½–2 feet high; branchlets leafy and umbellose, subflexuous, with internodes scarcely as long as the leaves. Leaves imparipinnate; leaflets 3–5, rhombic-ovate, acute, mucronulate, mostly alternate. Stipules minute, fusiform, tomentose; umbel stipitate, shorter than the leaf, 2–4-6-flowered, with an oval bract in it. Flowers small, subsessile, yellow with purplish tips. Calyx tubulate-campanulate. Legumen 1–2-seeded, pubescent, pendulous, incurved, with a subulate uncinate and somewhat refracted rostrum. Differs from *H. decumbens* by being more branched and pubescent, by mucronate leaves, stipules not spinose, peduncles of the umbels considerably shorter, smaller flowers with purpurescent tips and by legumes not carinate and mostly one-seeded. Tejon Pass; September.

HOSACKIA PURSHIANA, *Benth., Torr. and Gray's Flora, vol.* i, *p.* 327. Lotus sericeus, *Pursh.* Trigonella Americana, *Nutt.* A very variable species in its pubescence and in the size of its leaves. Our plant is one of its smallest forms. Posé creek; August.

LUPINUS GRACILIS, *Agardh., in Torr. and Gray's Flora, vol.* 1, *p.* 372. Lupinus microphylla, *Nutt.* Abundant in the vicinity of Benicia; July.

LUPINUS PERENNIS? *Linn.* Too young to determine with certainty. Same locality as above.

ROSACEÆ.

ROSA FRAXINIFOLIA, *Bork., Torr. and Gray's Folia, vol.* 1, *p.* 460. Fort Miller; July.

LYTHRACEÆ.

LYTHRUM ALATUM, *var.* linearifolium, *Gray's Pl. Lindh., part* 2, *p.* 188. Abundant in the bottoms of the Tajon Pass; September.

ONAGRACEÆ.

ZAUSCHNERIA CALIFORNICA, *Presl. in Torr. and Gray's Flora, vol.* 1, *p.* 486. Posé creek; August.

EPILOBIUM COLORATUM, *Muhl. in Torr. and Gray's Flora, vol.* 1, *p.* 489. E. tetragonum, *Pursh.* Posé creek; August.

ŒNOTHERA RHOMBIPETALA? *Nutt. in Torr. and Gray's Flora, vol.* 1, *p.* 493. Our specimens have no leaves, but only foliaceous bracts, at the tip of the branches, a little longer than the capsules; flowers yellow, very large, with rhomboid-ovate petals a little shorter than the style. Tube of the calyx long and slender. A tall and robust plant, very branching, 5–6-feet high, abundant on the bars of streams. Fort Miller; July.

GODETIA (ŒNOTHERA) WILLIAMSONI, nova species. Erecta 1–2 pedalis gracilis sublignosa, epidermide nitido-flavescente; foliis circa pollicaribus albidis lineari-lanceolatis vix runcinatis obtusis basi attenuatis, alternantibus fasciculatisque. Flores in spicis brevibus (et lateralibus) flexuosis 1–1½ pollicares; parte germinali minute hirsuta ovato-lanceolata costata, infundibuli fundo-ciliata, limbi laciniis reliquum calycem vix semipollicarem subaequantibus, petalis obovatis pollicaribus minutissime denticulatis flavis, magna *apice* macula violacea obovata et secus marginem semilunariter decurrente; staminibus alternatim inequalibus, longioribus petalafere æquantibus; stigmate lobis recurvatis ciliatis rubicundis mediam maculam superante. Capsula prismatica albida glabra $\frac{6}{10}$ pollicaris, breviter rostrata utrinque obtusa, costis octo quasi alata, seminibus fuscis prismaticis truncatis apice margine scarioso coronatis.

Slender, 1–2 feet high, with a glossy light-yellowish bark; leaves narrow, somewhat fleshy,

whitish, scarcely runcinate, often fascicled, about an inch long; spikes crowded on short lateral branches; flowers more than 1 inch in length; petals yellow, with a large deeply violet spot on top, obovate and reaching nearly down to the middle of the petals, and with a semi-lunar expansion along the upper margin. Stamens about half the length of the style, and nearly the height of the petals. Capsule light colored, glabrous, prismatic, obtuse at both ends, rostrate, winged with 8 projecting ribs approximated by pairs, seeds chocolate color, prismatic obtuse, with a scarious crown. Fort Miller; July.

CLARKIA ELEGANS, *Lindl. in Torr. and Gray's Flora, vol.* 1, *p.* 515. Phœostoma Douglasii, *Spach.* Posé creek; August.

LOASACEÆ.

MENTZELIA LÆVICAULIS, *Torr. and Gray's Flora, vol.* 1, *p.* 535. Bartonia lævicaulis, *Dougl.* Fort Miller; July.

UMBELLIFERÆ.

SIUM LINEARE, *Mich. Torr. and Gray's Flora, vol.* 1, *p.* 611. Sium tenuifolium, *Muhl.* S. latifolium, *Darl.* Posé creek; August.

CAPRIFOLIACEÆ.

SAMBUCUS VELUTINA, *nova species.* Frutex 5-6 pedalis, velutino-tomentosus, foliis supra nitidissimis. Foliola 5–7 ovato-lanceolata basi angustiori in lateralibus, obliqua medioque subcordata—acuta, argute-serrulata, dentium apice scarioso, supra nitida et in sicco minute corrugata, nervis parallelis sulcata. Corymbus parvus 4-5 radiatus. Eodem tempore eodemque ramo flores, fructum immaturum maturumque atro-rubentem, gustugrato similique rubi fructui exhibens.

Stem fruticose 5–6 feet high, densely tomentose throughout, excepting the upper surface of the leaves, which is shining and furrowed with the ribs. Folioles 5–7 ovate-lanceolate, finely serrate, coriaceous. Corymb small, 4–5-radiate. Berries deep purple when ripe, agreeable to the taste and almost equal to the black berry. It bears flowers, green and ripe fruit on the same branches. Posé creek; August.

RUBIACEÆ.

CEPHALANTHUS OCCIDENTALIS, *Linn. Torr. and Gray's Flora, vol.* 2, *p.* 31. Growing on the edge of creeks. Tejon valley; August.

COMPOSITÆ.

CARPHEPHORUS JUNCEUS, *Benth.* Growing 3–4 feet high in sandy plains and bush. Tejon Pass and Tulare valley; August.

BRICKELLIA WRIGHTII, *Gray's Pl. Wright. part* 2, *p.* 72. Posé creek; August.

CORETHROGYNE TOMENTELLA, *Torr. and Gray's Flora, vol.* 2, *p.* 99. In some of our specimens with inflorescence much developed, a very striking appearance is produced by the very dense and white tomentum being abruptly replaced by a green glandular and viscous pubescence on the inflorescence. Leaves on the lower part of the branches linear-oblong, appressed and closely sessile; those of the top of the stem broadly obovate obtuse; those of the branches small and bract-like. Tejon valley; September.

GUTTIERREZIA MICROCEPHALA, *Gray, Pl. Fendl. p.* 74, *ordn.* Brachyris microcephala, *D. C. Prodr. vol.* 5, *p.* 313. Our specimens being dry and advanced in florition, the heads of flowers, which in the genus *Guttierrezia* are always more or less ovoid, appear loosely turbinate, with straight and very concave scales. Tejon valley; September.

ASTER DURANDII, *Nutt. Gambel's plants.* Posé creek; September.

ASTER CARNEUS, *Nees; Torr. and Gray's Flora, vol.* 2, *p.* 133. Posé creek; September.

ASTER * * * *aff. punicei.* Too young for study. Scales of the involucre linear subulate, loosely imbricated. Achene compressed, pappus pilose. Fort Miller; July.

ASTER DIVARICATUS, (TRIPOLIUM.) *Nutt. Torr. and Gray's Flora, vol.* 2, *p.* 163. Posé creek; September.

SOLIDAGO CALIFORNICA, *Nutt. Torr. and Gray's Flora, vol.* 2, *p.* 203. Posé creek; August.

SOLIDAGO ANGUSTA, *Torr. and Gray's Flora, vol.* 2, *p.* 204. Tejon valley; September.

LESSINGIA GERMANORUM, *Cham. in D. C. Prodromus, vol.* 5, *p.* 35. Posé creek; September.

LINOSYRIS CERUMINOSA, (*nova species.*) Erecta 2–3-pedalis, fastigiato-ramosa; ramulis foliisque substantia resinosa spissa ochroleuco-nitentibus. Internodia superiora vix 3–4 lineis longa. Folia linearia subcarnosa puberula, sulco superne longitudinali, dorso rotundata; caulina interdum pollicaria, ramealia 3–6‴ long deorsum incurva. Capitula in apice conferta breviter pedicellata. Squamis involucralibus carinatis, filiformi-mucronatis, flavescentibus.

Stem erect 2–3 feet high, fastigiately branched, with crowded heads on short pedicles, forming a corymb. The whole surface of the stalks is covered with a short, apparently dense, tomentum, infiltrated with a yellowish resinous substance, giving it a texture of ear-wax of a greenish-golden hue. Internodes of the branchlets 3–4 lines. Leaves linear, puberulent, subcarnose, rounded on the back, with a furrow on the upper surface, about one inch long on the stem, half an inch or less, and recurved on the branches. Scales of the involucre carinate, light yellow, darkening towards the filiform mucro. Tejon Pass; September.

LINOSYRIS TERETIFOLIA, (*nova species.*) Fruticulus 8–12 pollicaris corymbosus, ericæ facie, resinoso-vernicatus, balsamum canadense redolens, cumuliformis fruticeta que vasta sistens. Trunculi emarcido-grisei, ramulis ochraceis punctatis, internodiis brevibus, naviculato-depressis, marginatis, filiformibus dense foliosis. Folia ½–1-pollicaria filiforme-teretia obtusa, superne pauxillum sulcata, æque ac ramuli, fusco-viridia et epidermide maxime viscido-resinosa induta. Capitula flava in summo spiculata subsessilia, squamis involucralibus obtusis apice glanduloso-gibbo.

A small shrub, strongly varnished and smelling of fir balsam, covering extensive tracts of land, like the common heath of Europe, and presenting a corymbose summit darkly-green with filiform, erect, dotted and scabrous leaves and branches, both alike, with crowded yellow heads of flowers. The lower branches have a grey and mealy, the upper a bright ochre-yellow dotted rind, with the internodes navicularly depressed and costately bordering ridges. Leaves obtuse, 1–1½ line long. Heads of flowers subsessile, aggregated into dense terminal spikelets and clusters, forming a corymb. All over the mountains around Tejon valley; September.

APLOPAPPUS MENZIESII, *Torr. and Gray's Flora, vol.* 2, *p.* 242. Tejon Pass; September.

BACCHARIS CŒRULASCENS, *D. C. Prodr., vol.* 5, *p.* 402. A shrub from 6–10 feet high, resembling a willow, and growing on the edge of streams. Posé creek and Tejon Pass; September.

PLUCHEA FŒTIDA, *D. C. Torr. and Gray's Flora, vol.* 2, *p.* 261. Baccharis fœtida, *Linn.;* Conyza camphorata, *Pursh.* Tejon Pass; September.

XANTHIUM STRUMARIUM, *Linn.; Torr. and Gray's Flora, vol.* 2, *p.* 294. Posé creek; August.

HELIANTHUS PETIOLARIS, *Nutt. Torr. and Gray's Flora, vol.* 2, *p.* 319. Posé creek; August.

HELIANTHUS DORONICOIDES? A glaucous variety, with striate purple stems, from 6–10 feet high. Tejon valley; September.

HEMIZONIA ANGUSTIFOLIA, *D. C. Torr. and Gray's Flora, vol.* 2, *p.* 398.. Fort Miller; July.

HEMIZONIA PUNGENS, *Torr. and Gray's Flora, vol.* 2, *p.* 399. In flower and fruit. Posé creek; August and September.

HEMIZONIA MACRADENIA, *D. C. Torr. and Gray's Flora, vol.* 2, *p.* 400. Tejon valley; September.

ARTEMISIA DRACUNCULOIDES, *Pursh. Torr. and Gray's Flora, vol.* 2, *p.* 416. Abundant in the Tejon valley and all over the country; August and September.

ARTEMISIA DOUGLASII, *Bess. Torr. and Gray's Flora, vol.* 2, *p.* 420. With the above; also very common.

GNAPHALIUM SPRENGELII, *Hook and Arn.; Torr. and Gray's Flora, vol.* 2, *p.* 447. G. luteo-album, *Var.;* occidentalis, *Nutt.* Posé creek; August.

SENECIO LONGILOBUS, *Var. glabrescens, Gray, Pl. Wright, No.* 399. Posé creek; August.

STEPHANOMERIA PANICULATA, *Nutt. in Torr. and Gray's Flora, vol.* 2, *p.* 473. Tall and branching; growing in large patches. King's river; July.

OLEACEÆ.

FRAXINUS JUGLANDIFOLIA, *Var. integrifolia, Lam. in D. C. Prodr., vol.* 8, *p.* 278. Fraxinus viridis, *Mich.* A large spreading tree on the edge of streams. Posé creek; August.

APOCYNEÆ.

APOCYNUM CANNABINUM, *Var. lanceolatum, nova varietas.* Leaves lanceolate, acute at both ends; very glabrous. River bottoms, Posé creek; August.

ASCLEPIADEÆ.

ASCLEPIAS MACROPHYLLA, *Nutt. Var. comosa, nova varietas.* Tota planta, exceptis pedunculis, pedicellis umbellarumque involucellis pubescentibus, glaberrima glauca. Caulis gracilis bipedalis subflexuosus erectus, internodiis aliquoties bipollicaribus. Folia spithamæa, ad primum quemque nodum opposita, cetærum ternatim verticillata, in sicco conduplicata, marginibus haud revolutis. Ramuli singuli vel bini in verticellis exiles, dense foliosi. Umbellæ binæ vel trinæ in verticillis supremis, pedunculis sesquipollicaribus, involucris lineari bracteatis, floribus parvis, numerosis, (usque ad quadraginta,) mediam folii partem vix æquantes. Pedicelli dimidia pedunculorum longitudine. Flores virescentes, albido marginati nec fusci. Corollæ lobi ovato-lanceolati concavi, resurgentes margine albo. Coronæ stamineæ stipes eadem ac loborum longitudine; lobi producti, breves obtusi, processibus cultriformibus, cristas connectivorum albo scariosas æquantibus.

Stem erect, slender, rather flexuose, about 2 feet high; leaves a span long, linear, smooth, doubled up without revolute margins, in whorls of three, except at the lowest node of each shoot, where they are opposite—internodes 2″ or more long, each with one or more slim and densely-leaved branchlets, giving it a comose appearance. Umbels 2–3 in each of the upper whorls, scarcely half the length of the leaf, with pedicels half the length of the peduncles, and, together with the involucral bracts, somewhat tomentose. Stipe of the staminal crown, about the length of its lobes, claws cultriform, erect, as high as the white tips of the connectives. Perhaps a new species?

It differs from Nuttall's description of *A. macrophylla*, in Gambel's Plants, by its tomentose pedicels, leaves more approximated, denser umbels, and the absence of brown color in its flowers. Grows abundantly in river bottoms. Posé creek; August.

GENTIANÆ.

ERYTHRÆA TRICANTHA, *Griseb. in D. C. Prodr., vol.* 9, *p.* 60, (*nova var.*) Our plant is intermediary between *E. tricantha and E. Muhlenbergii*, all, probably, being varieties of one species. A very showy and beautiful little plant. Fort Miller; July.

POLEMONIACEÆ.

GILIA ELONGATA? *Stend. in D. C. Prod., vol.* 9, *p.* 30. Our plant differs from D. C.'s description by being scarcely puberulent, although the capitula are densely lanate, by having mostly four segments on each side of the leaves, and by the tube of the corolla being much exserted. Tulare valley; August.

CONVOLVULACEÆ.

CUSCUTA SUBINCLUSA, (*nova species.*) Flores dense glomerati subsessiles. Calyx subovatus, lobis late ovatis obtusis imbricatis. Corolla primodum tubo cylindrico limbo, patente; deinde germine aucto fauceque marcescente contracta, sublageniformis; segmenta ovata, latiora supra basim, dimidia tubi longitudine. Antheræ elongatæ, infra angulis subsessiles, semi-inclusæ. Filamenta antheris breviora. Squamellæ marginibus parallelis maxime ad apicem fimbriatis, conniventes. Germen biapiculato-globosum, bistyle. Styli duplo fere germine longiores, tubi longitudine, subinæquales, stigmata capitata.

Flowers subsessile in dense clusters. Calyx subovate, with broadly oval-obtuse and imbricated lobes. Tube of the corolla cylindrical and afterwards rather lageniform by the increase of the germ and shrinking of the fauces. Lobes of the limb ovate, broadest above the base, half the length of the tube. Anthers subsessile under the dividing angles, half included. Filaments shorter than the anthers. Scales parallel-sided, fringed chiefly on the top, connivent. Germ globose, bi-apiculate with two styles about double the length of the germ, rather unequal; stigmas capitate. On a willow. Tejon Pass; September.

CUSCUTA . . . . . Probably the same as the above, but of smaller size, (for want of nourishment?) and past full florition. Grows on *Artemesia dracunculoides*, same locality.

BORAGINEÆ.

HELIOTROPIUM CURASSAVICUM, *Linn. in D. C. Prodr., vol.* 9, *p.* 558. Muddy localities, Tejon valley; August.

SCROPHULARIACEÆ.

ANTIRRHINUM CORNUTUM, *Benth. Pl. Hartw., p.* 328. Posé creek; August.

ANTIRRHINUM COULTERIANUM, *Benth. Var. appendiculatum*, (*nova var.*) Differs from the description in D. C. Prodr., vol. 9, p. 529, by the shortness of the peduncles; stem simple, erect, glanduloso-pubescent, violet-colored below; leaves on short petioles, ovate lanceolate, smooth; many sterile setiform branches, bracteate at top, springing from the axils; flowers in a subsecund raceme, almost subsessile. Calyx and corolla strongly pubescent, upper segment of the calyx broadly lanceolate, the rest linear lanceolate. Perhaps a new species. Posé creek; August.

PENTSTEMON HETEROPHYLLUS, *Lindl. in Bot. Reg. T.* 1899; *D. C. Prodr., vol. X, p.* 330. Tejon Pass, on mountain sides; September.

MIMULUS CARDINALIS, *Dougl. in D. C. Prodr., vol. X, p.* 370; *Curt. Bot. Mag. T.* 3560. Along streams, Fort Miller and Tejon Pass; August.

MIMULUS SCOULERI, *Hook. Fl. Bor. Am., vol. II, p.* 100. Might be referred to *M. luteus*, of which it seems to be but a small form. Posé creek; August.

MIMULUS EXILIS, *nova species.*—Herba circa pedalis erecta gracillima, ad apicem vix paulum ramosa, exsucca, sparse villosa. Caulis teres, jam prope basim et abinde flores singulos vel oppositos pedunculis setiformibus foliaque superantibus prodens. Internodia 1–1½‴ longa. Folia opposita sessilia elliptico-lanceolata, ¾‴ longa. Calyx inflato–campanulatus subangulatus (?) oblique quinquefidus, segmentis acutis, inferioribus majoribus latioribusque, demum magis inflatus. Corolla 4‴ longa, flava, limbo parvo, fauce pilosa maculata. Stamina inclusa. Capsula membranacea ovato-lanceolata subacuminata, calycem demum æquans. Semina parva ovata, testa granulata. Herba habitu a reliquo genere *Mimulo* satis diversa. Forsan subgenus vel genus novum (Cerastodium?) instituendum.

A slender erect herb, sparsely villous, a foot or more high, not succulent. Stem terete, filiform, a little branched near the top. Internodes one to nearly two inches long. Leaves sessile, elliptico-lanceolate. Peduncles setiform, longer than the leaves. Calyx oblique, subangular (?) deeply fivecleft, at first campanulate, and finally inflated. Corolla 4‴ long, yellow, limb small, fauces pilose, spotted. Stamens included. Capsules membranaceous, ovate-lanceolate pointed, finally equalling the calyx, ¼‴ long; seeds small, ovate, testa granulate. Habitus rather different from that of the genus *Mimulus*. Posé creek, August.

CASTILLEJA CANDENS, *nova species.*—Herba circa pedalis erecta, nonnunquam ramosa, basi glabra, supra cinereo-pubescens, bracteis calycibusque omnino rubentibus, basibus obscuris, apicibus fulgentibus; corollis glaberrimis, maxime exsertis, pallide atroflavis cunctisque nigricante venosis. Folia circa pollicaria, inferiora integra, linearia, acuta; cætera profunde tripartita, trinervia, segmentis linearibus; floralia latiora, apicibus acuminato-lacinulatis. Calyx 1¼–1½″, subinflatus bifidus, lobis lanceolato-bidentatis. Corolla fere bipollicaris striata, labio superiori sæpe pollicari, inferiori rudimentario.

Herbaceous, erect, about a foot high, and, except towards the base, grayish puberulent; less so on the lower surface of the leaves. Leaves 1″ or more long, and, as well as their segments, linear, the lower ones entire, acute; all others tripartite, trinerved; those of the inflorescence broader and acuminately lacinulate at their apex; the upper, as well as the calyx, entirely red and darkly veined, dusky at the base, scarlet at the top. Calyx 1¼ to 1½″ long, subinflated, bifid, each lobe lanceolately bidentate. Corolla 2″ long, smooth, of light fuscous yellow, with black veins; the lower lip rudimentary, the upper often 1″ long. In river bottoms, Posé creek; August.

CORDYLANTHUS FILIFOLIUS, *Nutt. in D. C. Prodr., vol. X, p.* 597; *Adenostegia rigida, Benth.* Posé creek; August.

LABIATÆ.

POGOGYNE DOUGLASII, *Benth. in D. C. Prodr., vol. XII, p.* 243. Fort Miller; July.

TRICHOSTEMA LANCEOLATUM, *Benth. Lab. in D. C. Prodr., vol. XII, p.* 573. A remarkably fragrant plant. Fort Miller; July.

SOLANACEÆ.

SOLANUM PTEROCAULUM, *Dunal in D. C. Prodr., vol. XIII, sect.* 1, *p.* 52. Posé creek; July.

SOLANUM CALIFORNICUM? *Dunal in D. C. Prodr., vol. XIII, sec.* 1, *p.* 86. A spreading plant not over a foot high, with purplish black berries and large light purple flowers. Fort Miller; July.

DATURA METEL, *Linn. in D. C. Prodr., vol. XIII, sec.* 1, *p.* 543. Abundant at Fort Miller and upwards; July.

SALSOLACEÆ.

OBIONE OCCIDENTALIS, *Moq. in D. C. Prodr., vol. XIII, sec* 11, *p.* 112. Side hills, abundant in southern California; August.

OBIONE BARCLAYANA? *Benth. in D. C. Prodr., vol. XIII, sec.* 11, *p.* 112. Differs by the petioles being 1–3‴ long. We have only the male flowers. Growing in bushes, rounded in their forms, about six feet high. Branches numerous, forming a thick and dense mass. Posé creek; August.

OBIONE BRACTEOSA, *nova species.* Planta herbacea, 2–3-pedalis, oleracea farinoso-lepidota, monoica. Rami sulcati, apicibus masculiferis paniculatis; parte inferiori foliosa et singulis axillis spicam fœmineam bracteosam prodentes. Internodia ½″ vel minora. Folia fusco-viridia glauca membranacea, sessilia, lanceolata acuminata mucronata, passim dentata vel integra, pollicaria vel minora, superne minus lepidota. Florum masculorum glomeruli globosi, in spicas laxiores, paniculum ebracteatum terminalem constituentes, dispositi. Flores fœminei in bractearum axillis glomerati; bracteæ attenuatæ, maxime acutatæ, albido-lepidotæ. Thecæ immaturæ 1‴ longæ, subgloboso-lenticulares, reticulatæ, cristis foliaceis muricatæ, alatæ acuteque apicatæ.

An herbaceous monœcious plant, 2–3 feet high, with furrowed branches about a foot or more long. The top nearly destitute of leaves, branching into a panicle composed of simple interrupted spikes of globosely-glomerate male flowers, and the lower part bearing in the axil of each leaf a bracteose spike of female flowers. Internodes ½″ or less. Leaves oleraceous, sessile, lanceolate acuminate, mucronate, sparsely dentate or entire, 1″ or less long, darkish, rather glaucous, less lepidote on the upper surface. Female spikes crowded with attenuated and strongly pointed whitish lepidote bracts. The immature thecæ orbicularly subglobose, reticulated, winged, muricated, and acutely tipped with jagged leafy crests. Growing in large bushes in bottom lands. Posé creek; August.

POLYGONACEÆ.

ERIOGONUM ANGULOSUM, *Benth. in D. C. Prodr., vol. XIV, now in press; E. Simpsoni, Torr. ined.* About a foot high, very tomontose. Leaves, above the baseal whorl, by twos, besides the clasping reflexed and very brittle bracts that in the number of 3 are present at each node throughout the genus. Pedicels smooth, setiform, unilateral. Involucre turbinate. Paleolæ obovate spathulate, very woolly, verdant or brownish at their exserted tips. Flowers small, numerous, whitish or light flesh-colored. We have two states of inflorescence different in appearance. Posé creek; September, on the margin of streams.

ERIOGONUM FASCICULATUM, *Nutt?* A low, stoutish, and much branched shrub, with a brown tattered bark on the lowest branches. Leaves elliptic oblong, fasciculate and slightly revolute.

Umbels compound on long peduncles. Flowers numerous, showy, whitish with red central lines. Posé creek; September.

ERIOGONUM ROSEUM, *nova species.* Herba sesquipedalis erecta virgato-ramosa arachnoideo-tomentosa, bracteis trinis parvis appressis ovato-acutis fusco-rubentibus, basi foliosa, dein scapiformis multumque infra medium in bractearum axillis trifurcata, verticillo unico trifoliato, nunc ramulos ac folia prodente, cum brachiis alternante, nonnunquam capitulis imæ furcæ insidentibus; abinde solum ad nodos ramiferos foliis singulis parvis. Folia anguste spathulato-ovata, margine undulata, in petiolum longum attenuata, superne rubentia, radicalia cum pedicellis 1½–2″ longa. Involucra sessilia plerumque solitaria, tubuloso-campanulata compressa secundum ramos subsecunda, nonnunquam et terminalia. Flores parvi exserti incarnati vel purpurei. Paleolæ capillares inclusæ.

The whole plant, except the flower, covered with a white arachnoid tomentum. Stem about 1½ foot high, virgately branched, with a whorl of three bracts at each node, (besides occasional leaves,) leafy at the base, hence scapiform and trifurcate below the middle, with the prongs opposite at the bracts, and alternate to a solitary ternate whorl of leaves, which sometimes produce accessory branches and leaves from their axils, and sometimes capitula seated in the very centre of the trifurcation; a small solitary leaf at each further branching. Leaves narrowly spathulate-obovate, undulate at the margin, attenuate into long petioles, with a reddish tinge; radical leaves 1½—2 lines long, including the petiole. Involucres sessile, mostly solitary, tubuloso-campanulate, acheniform, unilateral along the branches and terminal. Flowers small, glabrous, exserted, pinkish or purpurascent. Floral chaff capillary included. Posé creek; September.

ERIOGONUM PLUMATELLA, *nova species.* (Specimina incompleta.) Caulis vix pedalis, dense floccoso-tomentosus, rami divaricati, spiculis densis (cum internodiis vix 3-linearibus) pinnati. Folia * * * * * Bracteæ trinæ, patentes in spicis triangulares, in ramis oblongo-lineares, obtusæ. Involucra solitaria, campanulata, segmentis rotundatis, incarnato-fusca. Flores albi, lobis obovatis. Paleæ pallidæ, lineari–lanceolatæ vel truncatæ, apice denticulatæ, pube longa sparsa exserta.

(Specimens incomplete.) Stem hardly a foot high, densely tomentose, terminating in divaricate panicles, pinnate with crowded spikelets, internodes scarcely 3 lines long. Leaves, (apparently all radical.) Bracts in threes spreading, those of the spikelets triangular, those of the branches oblong linear obtuse. Involucres solitary, campanulate, with rounded segments, and of a reddish-brown color. Flower white, with ovate lobes. Paleolæ linear lanceolate truncate, denticulate at tip with a sparse, but exserted pubescence. Posé creek; September.

ERIOGONUM HEERMANNI, (*E. geniculatum Journ. Acad. Phil., vol.* 3, *part* 1,) *nova species.* (Specimina incompleta.) Caulis circiter pedalis, (æque ac involucra,) pallide virens glaberrimusque, ramis divaricatissime furcatis. Folia. * * * * * Bracteæ trinæ minutæ late triangulares, patentes. Involucra solitaria, parva, campanulato-subglobosa. Flores magni involucris duplo longiores, pallide incarnati, lobis exterioribus orbiculato-obcordatis interioribus obovato-linearibus acutis. Paleolæ lineares lanceolatæ cuneatæ, apice rubente truncato denticulato, involucrum æquantes, pube glandulosa.

Stem about a foot high, and, as well as the involucres, pale green and very glabrous; branches very divaricately forked. Leaves * * * * * (apparently only radical.) Bracts in threes, minute, broadly triangular, spreading. Involucres solitary, small, campanulate,

subglobose. Flowers large, twice the length of the involucre, flesh-colored, external lobes orbicular-obcordate, the others obovate-linear and acute. Paleolæ glanduloso-pubescent, slender, with more or less truncate denticulate red tips equalling the involucre. Same locality as the above.

ERIOGONUM NUDICAULE? *Torr. ined.* Tejon valley; September.

ERIOGONUM NUDUM, *Dougl. in Hook Fl. Bor. Amer., vol.* 2, *p.* 135. Posé creek; September.

ERIOGONUM INFLATUM, *Torr. in Fremont's 2d report.* Tejon valley; August.

EUPHORBIACEÆ.

EUPHORBIA OCELLATA, *nova species.* Herba cæspitosa depresso-ascendens glabra, fronde complanata, nodis tumentibus. Folia opposita oblique arcuateque cordato-ovata unaque cum petiolis plus minus 3 lin. longa, tertiam fere internodiorum partem æquantia, costa mediana superne sulcata inferne in nervum producta. Stipulæ filiformes. Involucra circa 1 lin. longa, pedicellis longiora ovoidea quinque-costata, quinque-dentata, dentibus laciniatis ochroleucis et alternantibus cum totidem glandulis margine annulari apothecia simulantibus, plerumque ochroleucis sed in capitulis junioribus nonnunquam purpureis. Capsulæ haud carinatæ.

Stem cespitose, depressed, ascending, glabrous; foliage flat and two-ranked, nodes enlarged. Leaves opposite, about 3 lines long including the very short petiole, scarcely one-third the length of the internodes, the exterior half of the leaf obliquely ovate, the other half acuminately-cordate. The middle rib arched, furrowed on the upper surface and prominent on the back. Stipules filiform. Involucre ovoid, 5-ribbed, about 1 line long, with shorter pedicels. Segments 5, with laciniate ochroleucous tips alternating with as many stipitate flat glands, with an annular margin, and resembling an *apothecium*, generally ochroleucous, but sometimes purple in the younger involucres. Capsules not carinate. Posé creek; August.

EREMOCARPUS SETIGERUS, *Benth. Croton setigerum. Hook.* Fl. Bor. Amer. Vol. 2, p. 114. Posé creek; August.

CYPERACEÆ.

CYPERUS. * * * * * Several forms, apparently of the same species, scarcely sufficiently advanced. Posé creek and Tulare valley; August.

GRAMINEÆ.

LEPTOCHLOA FASCICULARIS, *Smooth. Festuca fascicularis, Mich.* Posé creek; August.

BRYZOPYRUM DOUGLASII, *Hook.* Posé creek; September.

ERAGROSTIS * * * * * Tulare valley; September.

ELYMUS * * * * * Leaves rigid, glaucous, so completely revolute as to appear tubular, subulate subspinescent. Sheaths striate glabrous. Spikes elongated, slender, erect, subinterrupted. Spikelets few flowered smoothish. Paleæ with short and stiff awns. Tulare valley; September.

PHRAGMITES COMMUNIS, *Triun. Arundo phragmites, Linn.* The grass from which the Indians extract their sugar. Tejon valley; September.

PANICUM CAPILLARE, *Linn.* Two states of inflorescence, one young, the other far advanced with divaricately branching panicles, nearly 1½ foot long. Posé creek; August and September.

PANICUM CRUS-GALLI, *Linn.* Tulare valley; September.

E. DURAND.
T. C. HILGARD, *M. D.*

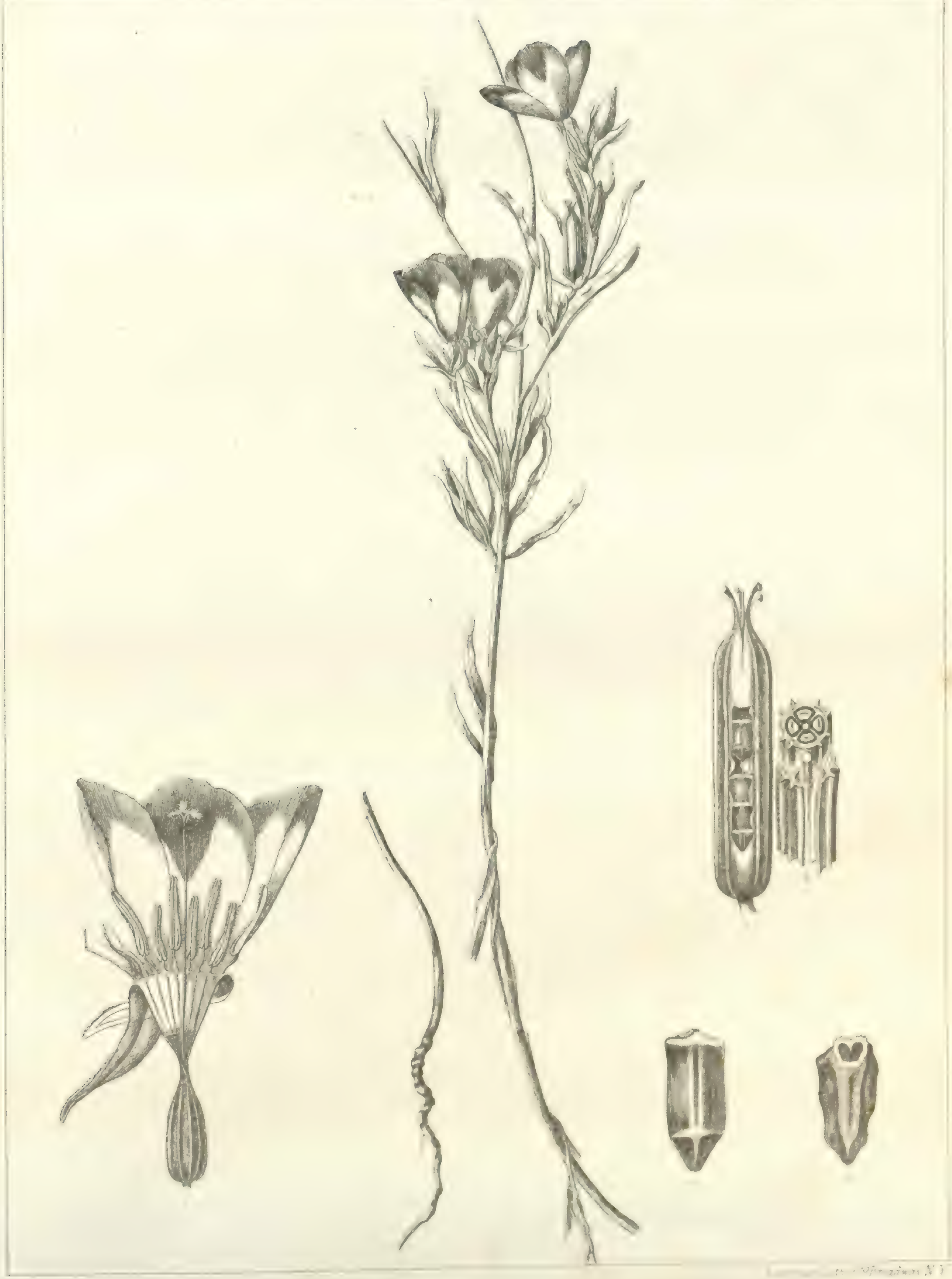
PHILADELPHIA, 1854.

ARGEMONE MUNITA.

Ackerman Lith 379 Broadway N.Y.

MALVASTRUM MARRUBIOIDES.

HOSACKIA HEERMANNI



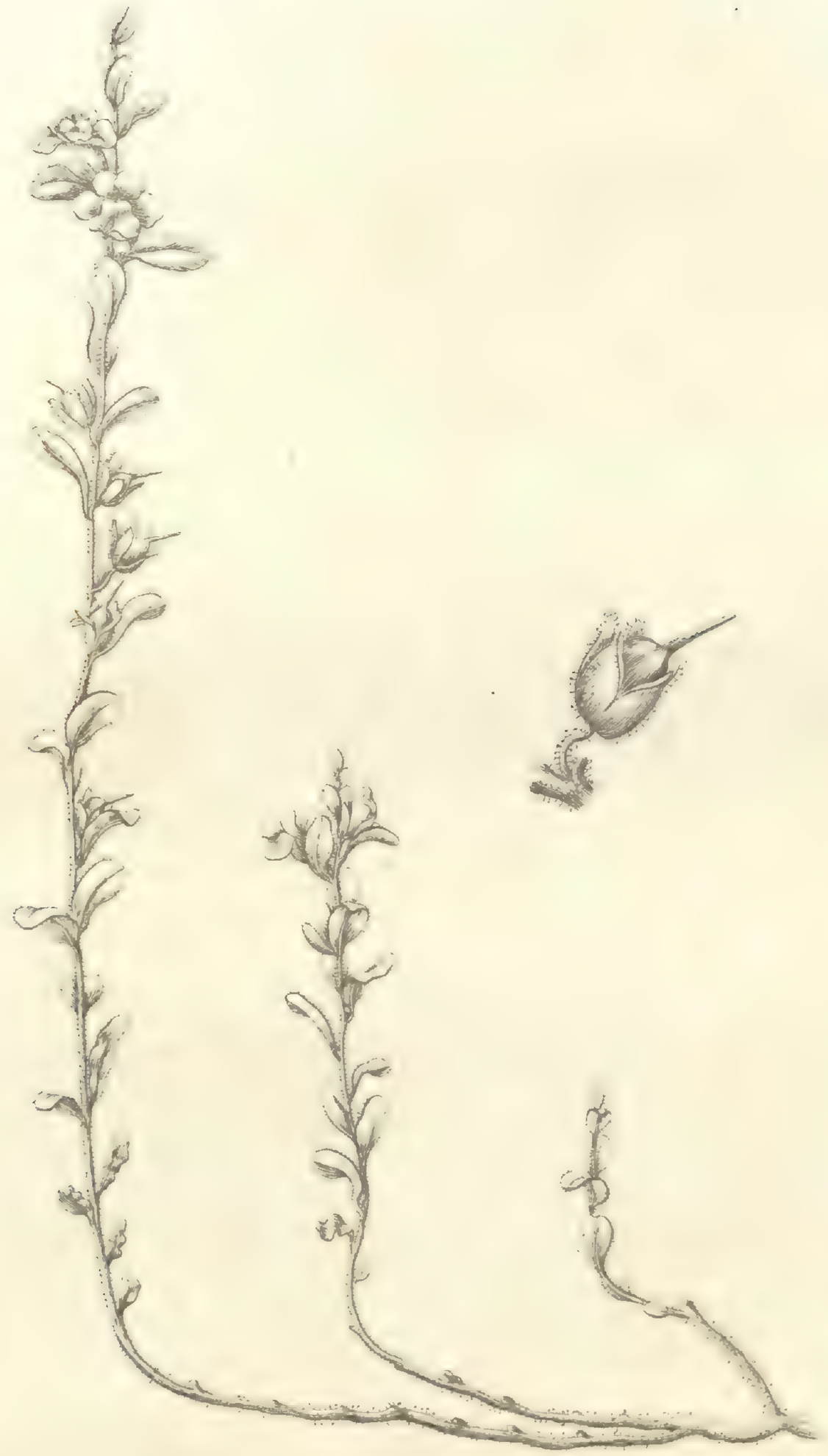
ŒNOTHERA WILLIAMSONI

LINOSYRIS CERUMINOSA

LINOSYRIS TERETIFOLIA

Lith. 379 Broadway N.Y.

ERYTHRÆA TRICANTHA.



ANTIRRHINUM CORNUTUM.

ARVIENSIUM COULTERIANUM.

U.S.P.R.R. Exp.s & Surveys, California

MIMULUS EXILIS

CASTELLEIA CANDENS.

OBIONE BRACTEOSA

OBIONE BRACTEOSA

1
2

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ERIOGONUM PLUMATELLA

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EUPHORBIA OCELLATA.

PART IV.

EXPLORATIONS AND SURVEYS FOR A RAILROAD ROUTE FROM THE MISSISSIPPI RIVER TO THE PACIFIC OCEAN.

WAR DEPARTMENT.

ROUTES IN CALIFORNIA, TO CONNECT WITH THE ROUTES NEAR THE THIRTY-FIFTH AND THIRTY-SECOND PARALLELS, EXPLORED BY LIEUT. R. S. WILLIAMSON, CORPS TOPOGRAPHICAL ENGINEERS, IN 1853.

ZOOLOGICAL REPORT.

WASHINGTON, D. C.
1857.

NOTE.

The Zoological Report will appear in a subsequent volume, it being found impossible to prepare it in time for publication in connexion with the other parts of this report.